

**A New *Perdita* from Utah's San Rafael Desert  
(Hymenoptera: Andrenidae)**

F. D. PARKER

Bee Biology & Systematics Laboratory, ARS, USDA, Utah State University,  
UMC 53, Logan, Utah 84322.

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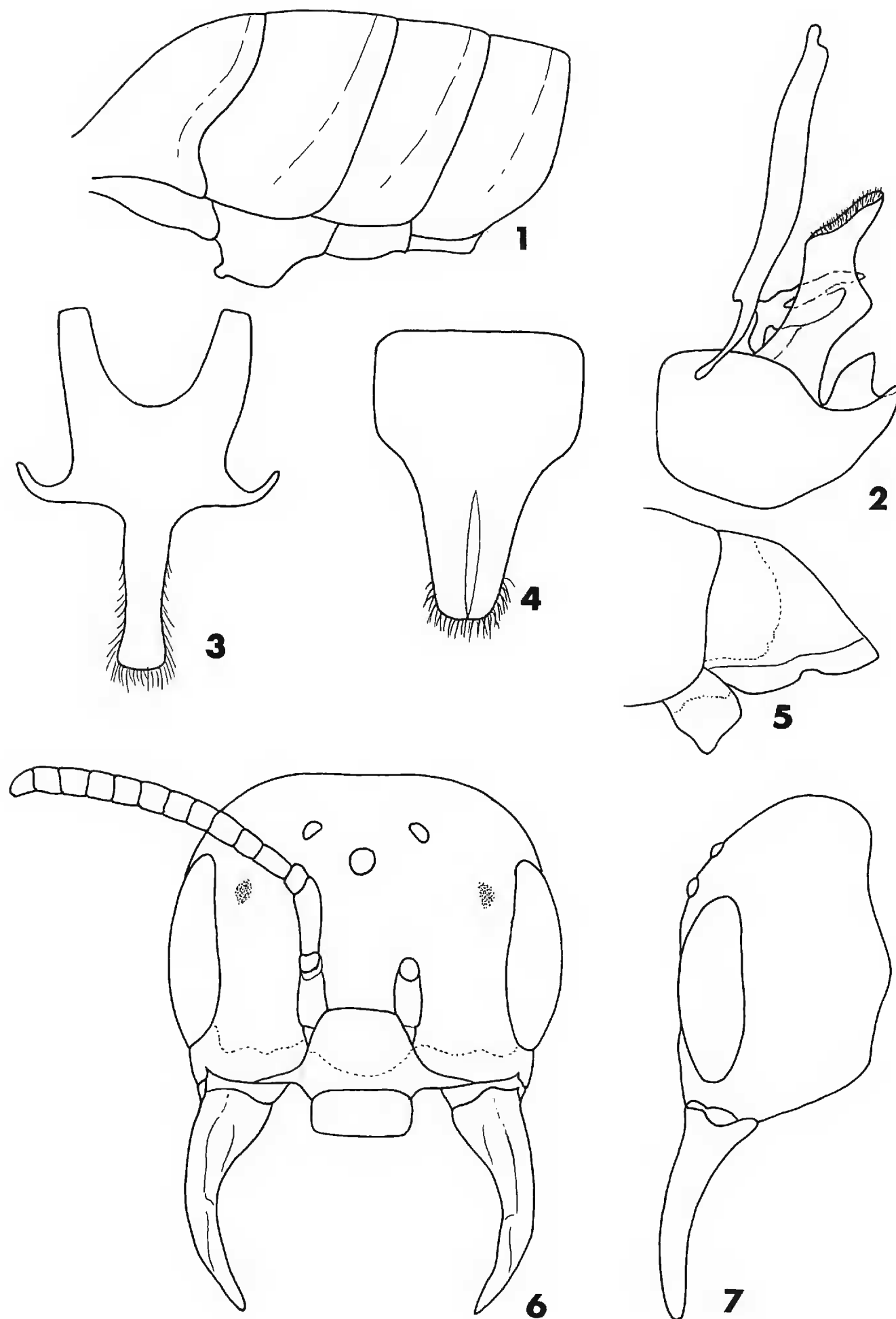
Bees of the genus *Perdita* are a large and diversified assemblage of species that are principally western North American in distribution. The number of species and subspecies described is well over 600, and most of our knowledge of *Perdita* has been through the important papers of P. H. Timberlake, now deceased. Many of our native flowering shrubs and forbs have one or more species of *Perdita* associated in some manner with the plant. For most species of *Perdita*, however, the nature of this bee-plant relationship has not been investigated. Perhaps their small size (most species are 2-4 mm long) has contributed to the lack of pollination studies of this interesting group of bees.

The systematics of *Perdita* is not easily understood because the genus is speciose, and the existing keys are difficult to use without a representative collection for comparisons. Although there are a number of unnamed *Perdita* in our collection, I am describing here only one, a rather bizarre species that was recently collected in southern Utah. This new bee is easily separable from all known *Perdita* by its unusually large size (10 mm) and sternal modifications.

This *Perdita* was collected in a 2500<sup>2</sup>-mile Utah desert that has been almost completely isolated by surrounding mountains since the late Pliocene (Hunt, 1974), and which has more endemic plant species than any other area in the Intermountain Region (Cronquist *et al.*, 1972).

***Perdita bohartorum* Parker, NEW SPECIES  
(Figs. 1-7)**

*Holotype male*.—Black; head, thorax dark blue-green; scutum, scutellum with coppery reflections; orange-red on mandible apex, mouth parts, apical margin of tergum 7; yellowish markings on mandible, labrum, clypeus, laterally on supra-clypeal area, beneath antenna, stripes laterally on crest of pronotum, pronotal lobe except medially, forefemoral apex, anterior stripe on fore and midtibiae; tergum 1 with only lateral stripe, terga 2-6 with lateral and apical stripes that become wider on apical terga, tergum 7 all yellow, sterna 1-7 mostly yellow except basally; tegula hyaline, wings hyaline, veins white; forebasitarsus whitish. Pubescence white, not dense on head, thorax; subapical thin hair band on sterna, terga. Punctuation on body not uniform; head mostly shiny with punctures separated by more than their diameter, surface polished, upper frons, behind interocellar area dull; punctures closer on thorax and legs but surface shiny; microstriae medially on dorsal surface of propodeum; abdomen shiny with shallow punctures. Clypeus with median truncation ( $\frac{1}{3}$  width of clypeus); mandibles as long as width of clypeus, tapering to point; labrum twice as wide as long, small; mouthparts extending beyond forecoxae in repose; galea 1.6 $\times$  longer than labrum; maxillary



Figs. 1-7. *Perdita bohartorum*. 1, Lateral view of male abdominal segments 1-4. 2, Lateral view of genital capsule. 3, Male sternum 8. 4, Male tergum 8. 5, Lateral view of male tergum and sternum 7. 6, 7, Male head; 6, Front view; 7, Lateral view.

palpal segments of equal length; basal labial palpal segment 4× longer than apical ones; hypostomal carina raised flange-like; head measurements as follows: wider (1.2×) than long (Fig. 6); antennocular distance 1.1× wider than interantennal distance; distance between median ocellus and antennal base shorter than distance from median ocellus to hind margin of vertex (1.5×); distance between lateral ocelli equal to ocellocular distance; distance between lateral ocelli greater (2.5×) than distance between median and lateral ocelli; distance between ocular and hind margin of vertex greater (1.4×) than ocellocular distance; postocular area (Fig. 7) wider (2×) than width of eye; malar space as wide as diameter of median ocellus; clypeus not protuberant in lateral profile; antenna nearly as long as length of eye; flagellomeres I, XI 1.4× longer than other flagellomeres, I somewhat flattened; scape short, as wide as 2nd submarginal cell; facial fovea small, oval, about size of median ocellus; hindfemur 5× as long as wide, hindtibia about 9× as long as wide; hindbasitarsus 6× as long as wide; fore, midlegs shorter; hindtrochanter normal; pronotum laterally with wide, flat depression, collar slightly indented medially, rounded laterally; scutum 1.2× wider than long, scutellum as long as horizontal area of propodeum, 1.3× wider than metanotum; 1st submarginal cell slightly longer (1.1×) than marginal cell; mesopleuron without sulcus connecting subalar pit and base of wings; abdomen slightly wider 1.05× than thorax; broad hyaline band apically on terga, sterna, band wider than length of subapical hair band; sternum 1 with shallow median longitudinal groove, sternum 2 with prominent U-shaped, keel-like median projection (Fig. 1); sterna 3-5 with lateral low swellings forming shallow median basin; sternum 7 with median notch; sternum 8 (Fig. 3); tergum 7 with lateral U-shaped notch (Fig. 5); tergum 8 (Fig. 4); genitalia as in Fig. 2; length 10 mm.

*Female*.—Like male except: head, propodeum with coppery reflection; mandible black; terga 2-5 mostly yellow, black apically, basally on some; pubescence on tergum 5 long, covering most of segment; scopal hairs on hind legs sinuate, as long as forebasitarsus; terga 3-5 with white patch of bristles ventrolaterally; clypeus longer, extending just beyond base of mandible; protuberant in lateral profile; mandible bent apically; face more oval; inner eye margins converging below; closed mandible nearly attaining opposite mandibular base; facial fovea narrow, nearly touching inner margin of eye, extending just beyond mid length of eye, as wide as antennal base; distance between median ocellus and antennal base equal to distance from median ocellus to hind margin of vertex; distance between lateral ocelli greater (1.3×) than ocellocular distance; distance between ocular and hind margin of vertex equal to ocellocular distance; postocular area slightly wider than width of compound eye; malar space narrower; antenna longer than eye; segments of hindleg shorter; sterna without projections; pygidium long, apically truncate.

*Variation*.—Only subtle differences exist in the markings, punctuation and structure of the paratypes.

*Systematics*.—I have not assigned this peculiar *Perdita* to any of the existing species groups or subgenera. In some characters it appears to be related to species in both of the subgenera *Cockerellia* and *Procockerellia*, but major differences are evident. For example, *P. bohartorum* has a wide malar space, long galea, flat clypeal area, and prominent swellings on the sterna. Species of *Cockerellia* lack

a malar space, the galea is shorter, the clypeus of the males is protuberant in profile and the abdomen lacks sternal projections. However, species of *Procockerellia* have similar pubescence and long mouthparts. One ponders the function of the distinctive sternal swellings since no other described species in this genus has such abdominal modifications.

*Types.*—Holotype ♂ and 11 ♂ paratypes: UTAH: *Emery Co.*, sandy ridge E. of Little Gilson Butte, 5100', May 29, 1981 (F. D. Parker, S. F. Parker). Holotype deposited in the U.S. National Museum #100071. Metatypes, 21 ♂ and 7 ♀ (3 mating pairs), same data except: June 3, 1982 (F. D., J. H., S. F., and A. D. Parker, T. L. Griswold).

*Floral records.*—All specimens were collected on flower heads of *Wyethia scabra* Hook. This composite is a multiflowered perennial found on hill tops and ridges in southern Utah, adjacent New Mexico and Arizona. The bees were collected during the afternoon (1–3:30 p.m.). Males were resting or flying around the flower heads and females were observed collecting pollen. This species was found only at the type location; large patches of the host plant, even within 0.5 km of the type locality, had no bees at the flowers. In both 1981 and 1982 we examined many *Wyethia* plants at several other locations without finding additional populations of this *Perdita*.

*Predator.*—A female of *Philanthus pulcher* D.T. was netted after she had captured a male of *P. bohartorum* on a *Wyethia* flower head.

*Etymology.*—It is a pleasure to name this distinctive bee after the brothers Bohart who have contributed so much to our present day knowledge of the systematics and biology of Hymenoptera. Richard was my major advisor during my graduate years at Davis, and George (Ned) was my "boss" and now is a colleague in the bee lab at Logan, Utah.

#### LITERATURE CITED

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